

1 In the claims:

- 2 1. A multi-terrain amphibious vehicle comprising:  
3 an elongated longitudinally extending chassis having a front end, a rear end, a left side, a  
4 right side, a centerline, a bottom surface and a top surface;  
5 at least two left side propulsion units and at least two right side propulsion units;  
6 said left side propulsion units being longitudinally spaced from each other;  
7 said right side propulsion units being longitudinally spaced from each other;  
8 each of said left side propulsion units and said right side propulsion units comprising:  
9 (a) a driven axle having an inner end, an outer end and a Y-axis, (b) first support means  
10 connected to said chassis for supporting said inner end of said driven axle, (c) second support  
11 means connected to said chassis for supporting said outer end of said driven axle, (d) at least two  
12 cam-shaped wheels mounted on said driven axle; each cam-shaped wheel having a rotation axis  
13 that coincides with said Y-axis of said driven axle; each cam-shaped wheel having a first  
14 perimeter segment having a mid-point, a second perimeter segment having a mid-point and a  
15 third perimeter segment having a mid-point; said first perimeter segment having a substantially  
16 arcuate contour and said mid-point of said first perimeter segment extends radially farther from  
17 said rotation axis than said respective mid-points of said second and third perimeter sections;  
18 drive power means mounted on said chassis; and  
19 power transmission means connecting said drive power means to said driven axles of said  
20 respective left and right side propulsion units.
- 21 2. A multi-terrain amphibious vehicle as recited in claim 1 further comprising a vehicle  
22 body mounted on said chassis.
- 23 3. A multi-terrain amphibious vehicle as recited in claim 2 wherein said vehicle body has  
24 a passenger compartment.
- 25 4. A multi-terrain amphibious vehicle as recited in claim 1 wherein said vehicle body is a  
26 buoyant structure that allows said vehicle to travel upon the top surface of a body of water.  
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1           5. A multi-terrain amphibious vehicle as recited in claim 2 wherein said propulsion units  
2 extend transversely beneath said bottom surface of said chassis to a position near said center line  
3 of said chassis.

4           6. A multi-terrain amphibious vehicle as recited in claim 1 wherein there are at least  
5 three left side propulsion units and at least three right side propulsion units.

6           7. A multi-terrain amphibious vehicle as recited in claim 1 wherein there are at least four  
7 left side propulsion units and at least four right side propulsion units.

8           8. A multi-terrain amphibious vehicle as recited in claim 1 wherein each of said  
9 propulsion units comprises at least three cam-shaped wheels mounted on said driven axles.

10          9. A multi-terrain amphibious vehicle as recited in claim 1 wherein each of said  
11 propulsion units comprises at least four cam-shaped wheels mounted on said driven axles.

12          10. A multi-terrain amphibious vehicle as recited in claim 1 wherein at least one of said  
13 second or third perimeter segments of said cam-shaped wheels has a cavity formed therein that  
14 functions as a water propulsion paddle when said vehicle is traveling upon the top surface of a  
15 body of water.

16          11. A multi-terrain amphibious vehicle as recited in claim 1 wherein both said second  
17 and third perimeter segments of said cam-shaped wheels have a cavity formed therein that  
18 functions as a water propulsion paddle when said vehicle is traveling on the top surface of a body  
19 of water.

20          12. A multi-terrain amphibious vehicle as recited in claim 1 wherein said cam-shaped  
21 wheels of each propulsion unit are rigidly connected to said driven axle to form an assembled  
22 structure in which there is always a first perimeter segment of one of said cam-shaped wheels  
23 oriented to contact a ground surface during each 360 degrees of rotation of said driven shaft.

24          13. A multi-terrain amphibious vehicle as recited in claim 1 wherein said first said  
25 support means comprises an inside support arm having a top end connected to said chassis and a  
26 bottom end connected to said inner end of said driven axle.

1           14. A multi-terrain amphibious vehicle as recited in claim 13 wherein said second  
2 support means comprises an outside support arm having a top end connected to said chassis and a  
3 bottom end connected to said outer end of said driven axle.

4           15. A multi-terrain amphibious vehicle as recited in claim 14 wherein said top ends of  
5 said inside support arm and said outside support arm are pivotally connected to said chassis.

6           16. A multi-terrain amphibious vehicle as recited in claim 15 further comprising shock  
7 absorber means connected between said respective inside and outside support arms and said  
8 chassis for cushioning the ride of said vehicle over rough terrain.

9           17. A multi-terrain amphibious vehicle as recited in claim 1 wherein said drive power  
10 means comprises at least one internal combustion engine.

11           18. A multi-terrain amphibious vehicle as recited in claim 17 wherein said power  
12 transmission means comprises a primary hydraulic pump driven by said drive power means that  
13 is connected by hydraulic hoses to a secondary hydraulic pump on each of said driven axles of  
14 said respective propulsion units.

15           19. A multi-terrain amphibious vehicle as recited in claim 17 wherein said power  
16 transmission means comprises a plurality of sprocket gears and chains that connect a drive shaft  
17 of said internal combustion engine to said respective driven axles of said respective propulsion  
18 units.

19           20. A wheel for a multi-terrain vehicle comprising:  
20 a wheel body having a predetermined width  $W_1$ , a front wall surface and a rear wall  
21 surface; said wheel body having a transversely extending axle aperture having a Y-axis; said  
22 wheel body having a cam-shaped peripheral surface; said cam-shaped peripheral surface  
23 comprising; (a) a first perimeter segment having a mid-point, (b) a second perimeter segment  
24 having a mid-point and (c) a third perimeter segment having a mid-point; said first perimeter  
25 segment having a substantially arcuate contour and said mid-point of said first perimeter segment  
26 extends radially farther from said Y-axis than said mid-points of said respective second and third  
27 perimeter segments.  
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1           21. A multi-terrain amphibious vehicle as recited in claim 1 wherein at least one of  
2 said second or third perimeter segments of said cam-shaped wheels has a cavity formed therein  
3 that functions as a water propulsion paddle when said vehicle is traveling upon the top surface of  
4 a body of water.

5           22. A multi-terrain amphibious vehicle as recited in claim 1 wherein both said second  
6 and third perimeter segments of said cam-shaped wheels have a cavity formed therein that  
7 functions as a water propulsion paddle when said vehicle is traveling upon the top surface of a  
8 body of water.